

# SCIENCE

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January 19, 1988

Dr. Joshua Lederberg  
President  
Rockefeller University  
New York City, NY 10021

Dear Josh,

A request for permission to reprint your article, "Genes and Antibodies" must officially pass through our permissions department, but I am sure you will receive approval. I am with this letter referring it to the proper sources.

In regard to your question about clonal selection, I think you have gotten two Koshlands mixed up. In this case, it was Marian E. Koshland who published the first evidence of the amino acid sequences being different in different antibodies, and followed this up by correlating the differences with different specific immunoglobins. According to her, she was never intrigued by the instruction theory of Pauling and Campbell, feeling the evidence that antigen did not stay in the system was convincing. As you remember, when the Pauling and Campbell school held sway, amino acid analyses were not that accurate, nor were antibodies sufficiently purified. Bunny deduced that if you purified antibodies enough and did very good analyses the differences in composition should be detectable (sequences were not possible at that time) She was right, and even showed that antigens differing only in arsenate phosphate groups had different amino acid compositions. Her first excellent evidence was greeted with great skepticism by the die-hards. When people were finally convinced, they all said it was "obvious".

Best wishes to you personally.

Cordially,

Daniel E. Koshland, Jr.

DEKJr/kg  
cc: Pat Morgan

N.B: Kabat did criticize the Pauling-Campbell  
"experiment" in 1943.

Please share the emb. paper  
with her.

\* (Embarrassed!)  
yes of course.  
Jr.

x... 12/1/88  
at uc/Bel  
with  
P279. ✓